

boilers at 17.00 pph each, and that emission limit was included in past permits. In this current application, Solvay has certified that the boiler stacks will now meet a particulate emission rate of 5.00 pounds per hour, each. This works out to an outlet loading of approximately 0.0056 grains per dry standard cubic foot of exhaust (gr/dscf).

The stacks also emit SO₂ and NO_x emission limited to 70 and 245 pph, respectively. From plant testing on other similar sources, Solvay has determined total VOC emissions from this boiler to be fuel related, thus based on AP-42 emission factors, the unit emits 0.50 pph of VOC. No changes are planned for the boiler operation or control equipment, thus these gaseous pollutant emission rates will not differ from the current projection.

AQD #26 Alkaten Product Dryer Baghouse

Solvay currently has a model PSTR-D-10-81 Peabody baghouse and industrial ventilation system to control particulate emissions from the existing Alkaten product dryer, designated source AQD #26. The industrial ventilation fan for this system is designed for 15,600 actual cubic feet per minute (11,700 dscfm) of exhaust air, leading to a 2'5" diameter baghouse stack (4,318 ft/min exit velocity). As mentioned in the project description, Solvay has recently identified NO_x emissions from a small 2.6 MM Btu/hr gas burner that provides heat to the Alkaten dried trona product kiln. Solvay has estimated NO_x emissions from AQD #26 at 0.25 pph, based on AP-42 for natural gas burning. Solvay has determined total VOC emissions from this dryer to be fuel related, thus based on AP-42 emission factors, they calculate that the unit emits 0.01 pph of VOC. This permit will codify the existence of these fuel related gaseous pollutants from this emission source at the Solvay plant.

No changes are planned for the Alkaten kiln operation, but Solvay had previously projected an emission rate from the Alkaten kiln operation at 1.10 pph; which was included in past permits as the AQD #26 particulate emission limit. Solvay has tested this stack, and from those results, the company is proposing that the Alkaten kiln stack now meet a revised particulate emission limit of 0.55 pounds per hour. This works out to an outlet loading of approximately 0.0055 grains per dry standard cubic foot of exhaust (gr/dscf).

AQD #47 Main Crusher Control Baghouse

Solvay currently has a model 640J-1020-TRH Mikro Pulsaire baghouse and industrial ventilation system to collect trona dust from transfer points and vents associated with the operation of the three existing hammermill crushers in the main crusher building, designated source AQD #47. As noted earlier, this source will be eliminated as part of this project, and by modifying the industrial ventilation system of source #2a, Solvay will control the emission points from these hammermills with the excess capacity of that #2a system.

AQD #48 "C" Trona Ore Calciner Precipitator

The "C" train trona calciner is currently rated to process 162 TPH of trona ore feed, but as noted earlier, Solvay plans to increase that design feed rate up to 200 TPH by installing new higher speed bucket elevators at the outlet to improve product removal capacity. The burners on this calciner have an existing design firing capacity of 200 MM Btu/hr, however Solvay has indicated that they feel this unit can

operate over-design up to 250 MM Btu/hr in this service. Thus Solvay feels that the firing capacity of these burners is sufficient to adequately calcine the increased trona ore throughput. The burners are designed for "Low NO_x" performance and as above, they had been rated for a NO_x emission rate of 0.05 lb/MM Btu. However, a NO_x control performance of 0.06 lb/MM Btu is now considered more appropriate. Thus the "C" calciner throughput change will increase NO_x emissions from 10 pph (0.05 @ 200), up to 15.00 pph (0.06 @ 250) for the AQD #48 stack. This works out to a 0.075 lb/ton ore feed factor considering the proposed 200 TPH design trona feed rate for this unit.

There is an existing electrostatic precipitator for particulate emission control on AQD #48, designed to handle 156,000 actual cubic feet per minute (60,212 dscfm) of exhaust through a 10'6" diameter stack (1,802 ft/min exit velocity). Internal Solvay testing has indicated that the precipitator can handle this increased ore throughput, and still meet the current 9.30 pph particulate emission limit. Thus the outlet grain loading will be 0.018 grains per standard cubic foot of exhaust.

From plant testing on this source, Solvay has projected maximum VOC emissions from trona based emissions and gas firing, of 1.94 pounds per ton of ore throughput. For the former 162 TPH process rate, this works out to 314.28 pph for each calciner, while for the proposed 200 TPH maximum process rate, the VOC emission rate from AQD #48 will be 388.00 pph.

CO emissions also exist from trona calcining, with some CO coming from the fuel combustion at the kiln burner, and a significant portion coming from partial combustion of the hydrocarbons driven off the trona ore in the hot environment of the calciner kiln. From plant testing on this source, Solvay has projected maximum CO emissions from trona based emissions and gas firing, of 3.81 pounds per ton of ore throughput. For the former 162 TPH process rate, this works out to 617.22 pph for each calciner, while for the proposed 200 TPH maximum process rate, the CO emission rate from AQD #48 will be 762.00 pph.

AQD #51 Dryer 5 Scrubber Stack

Solvay currently controls particulate emissions on the DR-5 gas fired dryer exhaust stream using a model FAA 100-AL Flakt electrostatic precipitator, designated source AQD #51. The industrial ventilation fan for this system is designed for 100,000 actual cubic feet per minute (35,000 dscfm) of exhaust air, leading to an 8 ft. diameter baghouse stack (1,989 ft/min exit velocity). As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #51 stack by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #51 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 4.80 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this precipitator stack exhaust will meet an outlet emission loading of 0.008 grains/dscf of exhaust. At the currently specified 35,000 dscfm, this works out to a revised allowable particulate emission rate of 2.40 pounds per hour.

The stack also emits NO_x emissions limited to 18.00 pph. From plant testing on other similar sources, Solvay has determined total VOC emissions from this boiler to be fuel related, thus based on AP-42 emission factors, the unit emits 0.28 pph of VOC. No changes are planned for the burner operation or control equipment, thus these gaseous pollutant emission rates will not differ from the current projection.

AOD #73 MBS Scrubber Stack

Solvay currently controls particulate emissions on the meta-bisulfite dryer exhaust stack using a Ducon Oriclone venturi scrubber, designated source AOD #73. The industrial ventilation fan for this system is designed for 10,500 actual cubic feet per minute (7,000 dscfm) of exhaust air, leading to a 2 ft. diameter baghouse stack (3,342 ft/min exit velocity). As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AOD #73 scrubber stack by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AOD #73 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 1.20 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this scrubber stack exhaust will meet an outlet emission loading of 0.015 grains/dscf of exhaust. At the currently specified 7,000 dscfm, this works out to a revised allowable particulate emission rate of 0.90 pounds per hour.

Existing housekeeping sources which will be modified under this expansion include:

AOD #2a Ore Crusher Building Housekeeping Baghouse

Solvay currently has a model PMTR-10-544T Peabody baghouse and industrial ventilation system to collect soda ash dust from transfer points associated with the ore crusher building, designated source AOD #2a. As mentioned above, Solvay modify the industrial ventilation system of this source to control the emission points from the former AOD #47 hammermill collection baghouse, which will be eliminated as part of the project. The #2a fan will not be changed, however, and that fan's exhaust air volume will simply be re-apportioned throughout the modified collection ductwork. The industrial ventilation fan for the #2a system is designed for 35,000 actual cubic feet per minute (28,000 dscfm) of exhaust air, leading to a 3'6" diameter baghouse stack (3,638 ft/min exit velocity). With the same projected exhaust volume, the existing source #2a particulate emission rate will remain at the current level of 1.60 pph. This works out to an outlet loading of approximately 0.0067 grains per dry standard cubic foot of exhaust (gr/dscf).

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AOD #6b Product Storage Silo Reclaim Area Housekeeping Baghouse

Solvay currently has a model PS-10-256TE Peabody baghouse and industrial ventilation system to collect soda ash dust from transfer points associated with the soda ash reclaim operation from the existing soda ash storage silos, designated source AOD #6b. The industrial ventilation fan for this system is designed for 7,500 actual cubic feet per minute (5,900 dscfm) of exhaust air, leading to a 2.20 ft. diameter baghouse stack (1,973 ft/min exit velocity). As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AOD #6b baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AOD #6b at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 1.40 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 5,900 dscfm, this works out to a revised allowable particulate emission rate of 0.51 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #10 Coal Crushing & Storage Area Baghouse

Solvay currently has a model PSTR-10-64D Peabody baghouse and industrial ventilation system to collect coal dust from the coal crushing and storage building, designated source AQD #10. The industrial ventilation fan for this system is designed for 3,300 actual cubic feet per minute (3,000 dscfm) of exhaust air, leading to a 2.0 ft. diameter baghouse stack (1,050 ft/min exit velocity). As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #10 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #10 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.60 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 3,000 dscfm, this works out to a revised allowable particulate emission rate of 0.26 pounds per hour.

In another measure to reduce annual particulate emissions and demonstrate compliance with ambient standards, Solvay has proposed to limit the usage of this AQD #10 baghouse to 12 hours per day. Coal deliveries are not continuous and the baghouse is not needed full time. Thus 4380 hours of operation are considered in this analysis, which reduces the annual particulate emissions from AQD #10 to 0.57 TPY.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #11 Coal Transfer Station Housekeeping Baghouse

Solvay currently has a model PSTR-10-64D Peabody baghouse and industrial ventilation system to collect coal dust from transfer points associated with the coal reclaim operation from the existing enclosed coal storage building, designated source AQD #11. The industrial ventilation fan for this system is designed for 3,200 actual cubic feet per minute (2,500 dscfm) of exhaust air, leading to a 1.80 ft. diameter baghouse stack (1,258 ft/min exit velocity). As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #11 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #11 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.60 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 2,500 dscfm, this works out to a revised allowable particulate emission rate of 0.21 pounds per hour.

In another measure to reduce annual particulate emissions and demonstrate compliance with ambient standards, Solvay has proposed to limit the usage of this AQD #11 baghouse to 12 hours per day. Coal deliveries are not continuous and the baghouse is not needed full time. Thus 4380 hours of operation are considered in this analysis, which reduces the annual particulate emissions from AQD #11 to 0.46 TPY.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #14 Coal Bunker Area Housekeeping Baghouse

Solvay currently has a model PS-10-100D Peabody baghouse and industrial ventilation system to collect coal dust from bin vents and transfer points associated with the coal handling operation in the existing boiler coal bunkers, designated source AQD #14. The industrial ventilation fan for this system is designed for 5,400 actual cubic feet per minute (4,275 dscfm) of exhaust air, leading to a 1'5" diameter baghouse stack (3,426 ft/min exit velocity). As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #14 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #14 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 1.00 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 4,275 dscfm, this works out to a revised allowable particulate emission rate of 0.37 pounds per hour.

In another measure to reduce annual particulate emissions and demonstrate compliance with ambient standards, Solvay has proposed to limit the usage of this AQD #14 baghouse to 12 hours per day. Coal deliveries are not continuous and the baghouse is not needed full time. Thus 4380 hours of operation are considered in this analysis, which reduces the annual particulate emissions from AQD #14 to 0.81 TPY.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #41 Bulk Sodium Sulfite Loadout Area Housekeeping Baghouse

Solvay currently has a model 6-360-36-84S Dust Control Systems baghouse and industrial ventilation system to collect dust from bin vents and transfer points associated with the bulk sodium sulfite loadout operations, designated source AQD #41. The industrial ventilation fan for this system is designed for 2,510 actual cubic feet per minute (2,250 dscfm) of exhaust air, leading to a 1.0 ft. diameter baghouse stack (3,196 ft/min exit velocity). As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #41 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #41 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.40 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 2,250 dscfm, this works out to a revised allowable particulate emission rate of 0.19 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #44 Caustic Lime Delivery Bin Vent Baghouse

Solvay currently has a model 495-8-20 Mikropulsaire baghouse and industrial ventilation system to collect dust from the pneumatic delivery of lime to the caustic plant lime silo bin vent, designated source AQD #44. The industrial ventilation fan for this system is designed for 2,630 actual cubic feet per minute (2,100 dscfm) of exhaust air, leading to a 1 ft. diameter baghouse stack (3,349 ft/min exit velocity).

As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #44 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #44 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.90 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 2,100 dscfm, this works out to a revised allowable particulate emission rate of 0.18 pounds per hour.

In another measure to reduce annual particulate emissions and demonstrate compliance with ambient standards, Solvay has proposed to limit the usage of this AQD #44 baghouse to 12 hours per day. Lime deliveries are not continuous and the baghouse is not needed full time. Thus 4380 hours of operation are considered in this analysis, which reduces the annual particulate emissions from AQD #44 to 0.39 TPY.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #46 East Ore Storage Building Reclaim Baghouse

Solvay currently has a model 420-CL-029B Mikro Pulsaire baghouse and industrial ventilation system to collect trona dust from transfer points associated with the ore reclaim operation from the existing east ore storage building, designated source AQD #46. As noted earlier, Solvay will eliminate baghouse AQD #2b as part of the project, with AQD #46 system absorbing the load of the existing AQD #2b pick-up points. Solvay feels that the AQD #46 industrial ventilation system has the capacity to add these points without sacrificing system control efficiency, and still maintain emissions within allowable limits.

This industrial ventilation system fan will be designed for 10,500 actual cubic feet per minute (8,275 dscfm) of exhaust air, leading to a 2.20 ft. diameter baghouse stack (2,762 ft/min exit velocity). As mentioned in the project description, Solvay has also committed to reducing permitted emissions from the AQD #46 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #46 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 1.20 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 8,275 dscfm, this works out to a revised allowable particulate emission rate of 0.71 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #50 "C" Train Dryer Area Housekeeping Baghouse

Solvay currently has a model 2805-10-20-TRH-C Mikro Pulsaire baghouse and industrial ventilation system to collect dust from transfer points associated with the "C" train dryer area soda ash handling operations, designated source AQD #50. The industrial ventilation fan for this system is designed for 26,000 actual cubic feet per minute (16,250 dscfm) of exhaust air, leading to a 4'6" diameter baghouse stack (1,635 ft/min exit velocity). As mentioned in the project description, Solvay has committed

to reducing permitted emissions from the AQD #50 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #50 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 2.10 pph on this basis (system exhaust volume was specified differently in the past). Solvay has tested this stack, and from those results, the company is proposing that this dryer area soda ash handling baghouse stack now meet a revised particulate emission limit of 0.70 pounds per hour. This works out to an outlet loading of approximately 0.0050 grains per dry standard cubic foot of exhaust (gr/dscf).

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #53 Product Storage Silo Discharge Area Housekeeping Baghouse

Solvay currently has a model 138D-10-20-TRH-C Mikro Pulsaire baghouse and industrial ventilation system to collect soda ash dust from the product transfer points in the discharge area at the bottom of the existing soda ash storage, designated source AQD #50. As noted earlier, Solvay will eliminate baghouse AQD #69 as part of the project, with AQD #53 system absorbing the load of the existing AQD #69 pick-up points. Solvay feels that the AQD #50 industrial ventilation system has the capacity to control these additional points without sacrificing system control efficiency, and still maintain emissions within allowable limits.

This industrial ventilation system fan will be designed for 13,175 actual cubic feet per minute (10,500 dscfm) of exhaust air, leading to a 2.8 ft. diameter baghouse stack (2140 ft/min exit velocity). As mentioned in the project description, Solvay has also committed to reducing permitted emissions from the AQD #53 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #50 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 1.10 pph on this basis (system exhaust volume was specified differently in the past). Solvay has tested this stack, and from those results, the company is proposing that this product silo reclaim baghouse stack now meet a revised particulate emission limit of 0.45 pounds per hour. This works out to an outlet loading of approximately 0.0050 grains per dry standard cubic foot of exhaust (gr/dscf).

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #64 Sulfite Blending Drumming Bin Vent Baghouse

Solvay currently has a model 16S-6-30B Mikro Pulsaire baghouse and industrial ventilation system to collect dust from the sulfite blending drumming bin vent, designated source AQD #64. This industrial ventilation system fan is designed for 1,130 actual cubic feet per minute (900 dscfm) of exhaust air, leading to a 6 inch diameter baghouse stack (4,583 ft/min exit velocity). As mentioned in the project description, Solvay has also committed to reducing permitted emissions from the AQD #64 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #64 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.15 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01

grains/dscf of exhaust. At the currently specified 900 dscfm, this works out to a revised allowable particulate emission rate of 0.08 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #65 Sulfite Blending Bagging Machine Vent Baghouse

Solvay currently has a model PS-5-16-C Peabody baghouse and industrial ventilation system to collect dust from the sulfite blending bagging machine vent, designated source AQD #65. This industrial ventilation system fan is designed for 400 actual cubic feet per minute (325 dscfm) of exhaust air, leading to an 8 inch diameter baghouse stack (382 ft/min exit velocity). As mentioned in the project description, Solvay has also committed to reducing permitted emissions from the AQD #65 baghouse by changing the basis on which the allowable limits are set. In past permits, Solvay had estimated emissions from AQD #65 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.06 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 325 dscfm, this works out to a revised allowable particulate emission rate of 0.03 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #68 Combined Product Bagging Machine Trona Silo Housekeeping Baghouse

Under permit MD-282 Solvay proposed using a model 81S-10-20 Mikro Pulsaire bin vent baghouse and industrial ventilation system, designated source AQD #68, to collect dust from the vent of the trona silo feeding the combined product bagging machine. This industrial ventilation system fan is designed for 5,277 actual cubic feet per minute (4,145 dscfm) of exhaust air, leading to a 1.17' x 0.98' rectangular baghouse stack (4,602 ft/min exit velocity).

As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #68 baghouse by changing the basis on which the allowable limits are set. For MD-282, Solvay estimated emissions from AQD #68 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.41 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 4,145 dscfm, this works out to a revised allowable particulate emission rate of 0.36 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #70 Combined Product Bagging Machine Sulfite Silo Bin Vent Baghouse

Under permit MD-282 Solvay proposed using a model 64S-10-20 Mikro Pulsaire bin vent baghouse and industrial ventilation system, designated source AQD #70, to collect dust from the vent of the sodium sulfite silo feeding the combined product bagging machine. This industrial ventilation system fan is designed for 4,021 actual cubic

feet per minute (3,159 dscfm) of exhaust air, leading to a 1.63' x 0.84' rectangular baghouse stack (2,937 ft/min exit velocity).

As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #70 baghouse by changing the basis on which the allowable limits are set. For MD-282, Solvay estimated emissions from AQD #70 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.41 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 3,159 dscfm, this works out to a revised allowable particulate emission rate of 0.27 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #71 Combined Product Bagging Machine MBS Silo Bin Vent Baghouse

Under permit MD-282 Solvay proposed using a model 64S-10-20 Mikro Pulsaire bin vent baghouse and industrial ventilation system, designated source AQD #71, to collect dust from the vent of the meta-bisulfite (MBS) silo feeding the combined product bagging machine. This industrial ventilation system fan is designed for 4,021 actual cubic feet per minute (3,159 dscfm) of exhaust air, leading to a 1.63' x 0.84' rectangular baghouse stack (2,937 ft/min exit velocity).

As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #71 baghouse by changing the basis on which the allowable limits are set. For MD-282, Solvay estimated emissions from AQD #71 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits were set at 0.41 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 3,159 dscfm, this works out to a revised allowable particulate emission rate of 0.27 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

AQD #72 MBS Process Soda Ash Feed Bin Vent Baghouse

Under permit MD-282 Solvay proposed using a model 48BV36 Smoot bin vent baghouse and industrial ventilation system, designated source AQD #72, to collect dust from the vent of the MBS silo feeding the combined product bagging machine. As noted earlier, Solvay will eliminate baghouse AQD #40 as part of the project, with that source's old 25S-8-20TR Mikro Pulsaire baghouse being transferred for service to the AQD new #72 system. This industrial ventilation system fan is designed for 1,300 actual cubic feet per minute (820 dscfm) of exhaust air, leading to an 8" diameter baghouse stack (3,724 ft/min exit velocity).

As mentioned in the project description, Solvay has committed to reducing permitted emissions from the AQD #72 baghouse by changing the basis on which the allowable limits are set. For MD-282, Solvay estimated emissions from AQD #72 at 0.02 grains per dry standard cubic foot of exhaust (gr/dscf), and particulate emission limits

were set at 0.14 pph on this basis (system exhaust volume was specified differently in the past). In this current application, Solvay is proposing to reduce the allowable for this source and has certified that this baghouse will meet an outlet emission loading of 0.01 grains/dscf of exhaust. At the currently specified 820 dscfm, this works out to a revised allowable particulate emission rate of 0.07 pounds per hour.

From plant testing on other similar sources, Solvay has predicted that total VOC emissions from trona based emissions will be negligible for this baghouse.

POLLUTANT EMISSION RATES:

Table I, attached as an appendix to the end of this analysis, lists all of the particulate, SO₂, NO_x and VOC emission sources at the Solvay plant. Table B summarizes the changes as shown in Table I (numbers vary slightly due to rounding).

Table B: Solvay Trona Plant Pollutant Emission Rate Changes (TPY)				
Source	PM ₁₀	SO ₂	NO _x	VOC
Existing Solvay Trona Plant	482	618	2369	4639
Proposed "D" Line Expansion	89	0	236	2339
Current Proposed Modifications	-181	0	67	969
Bagging/MBS Modifications	-5	0	0	0
Totals	385	618	2672	7947

As can be seen from the table, Solvay currently is allowed to emit 482 TPY of particulate, 618 TPY of sulfur dioxide and 2369 TPY of nitrogen oxides. Not considered in past permitting actions, but also existing at the plant is a projected 4639 TPY of VOC emissions. Solvay plans on adding about 89 TPY of particulate, 236 TPY of NO_x, and 2339 TPY of VOC from equipment associated installed with the new "D" process line. Adjustments to the allowables of existing equipment and other small modifications results in the elimination of about 186 TPY of particulate, but add 67 TPY NO_x, and 969 TPY VOC's. Therefore after construction of the new equipment, the plant will be permitted a total emission about 385 TPY of particulate, 618 TPY of SO₂, 2672 TPY of NO_x and 7947 TPY of VOC's.

As noted earlier, the VOC's emitted from the trona plant contain individual pollutant species which are listed under Title III of the U.S. Clean Air Act Amendments of 1990, as hazardous air pollutants (HAP's). Table II breaks down the VOC emissions from the Solvay Plant, by emission source and by pollutant. Of the 1,814 pph VOC's projected from the plant, approximately 464 pph (2,033 TPY) of those compounds (26%) are HAP species. The HAP pollutants are emitted as 27 chemical compounds, with the largest single emission being represented by the pollutant 1,3 butadiene, at 118.51 pph (519.1 TPY). This is followed by ten other compounds with short term emissions greater than 10 pounds per hour. In order of magnitude, these are: 68.39 pph (299.6 TPY) of trichloroethylene, 54.59 pph (239.1 TPY) of xylene, 53.19 pph (233.0 TPY) of benzene, 36.54 pph (160.1 TPY) of 2-butanone, 32.15 pph (160.1 TPY) of hexane, 28.34 pph (124.1 TPY) of toluene, 23.32 pph (102.1 TPY) of 1,1,1 trichloroethane, 14.32 pph (62.7 TPY) of styrene, 12.11 pph (53.0 TPY) of ethylbenzene, and 10.72 pph (47.0 TPY) of acrylonitrile. According to Solvay's emission inventory, other pollutants emitted

at rates greater than one pound per hour are methylene chloride, acetaldehyde, and acrolein.

NEW SOURCE PERFORMANCE STANDARDS (NSPS):

Subpart 000

The trona plant handles sodium compounds, which are defined as "non-metallic minerals" under Subpart 000 of the NSPS section of the Wyoming Air Quality Standards and Regulations. Since the plant crushes and mills these sodium minerals, it is considered a "non-metallic mineral processing plant" under the definition in the regulation. Subpart 000 is applicable to "each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, storage bin and truck/rail loadout". Therefore the baghouse dust collection systems proposed under this project are subject to the limitations of the regulation, including opacity and emission limits. Under Subpart 000 the particulate emissions from the plant housekeeping baghouses must be held to within 0.05 grams per dry standard cubic meter (g/dscm) of baghouse exhaust and must have visible emissions within 7% opacity.

The 0.05 g/dscm rate is equivalent to 0.02 grains per dscf. Since all newly constructed or modified housekeeping dust control systems will meet an emission limit of 0.01 gr/dscf, the particulate ceiling of the regulation is met. A permit condition will insure that Solvay meets these emission and opacity limits.

Subpart Dc

The Division has reviewed the applicability of NSPS Subpart Dc and finds that the section applies to the proposed 100 MM Btu/hr gas fired boiler because the unit is a new facility sized between 10 and 100 MM Btu/hr. Under Subpart Dc, standards for particulate and sulfur dioxide emissions apply only to those boilers that fire coal. The only Subpart Dc requirements for those boilers that fire other fuels are administrative notification requirements contained in subparagraph 60.48c. Under that section the owner/operator of a new boiler is required to submit notification of the dates of construction, anticipated and actual start-up, with confirmation of the design heat input capacity and fuels to be combusted. This permit will contain State of Wyoming requirements that mandate compliance with these provisions.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT):

Solvay has conducted a "Top Down" BACT review of emission controls for this plant expansion, and the Division has determined that they have selected the most stringent controls available for all proposed operations.

Particulate Emissions

★ Calciner ★

As noted earlier, Solvay is proposing to use an electrostatic precipitator, designated source AQD #80, to control particulate emissions from this calciner stack. Solvay has certified that this precipitator will meet an outlet particulate loading of 0.015 grains per dry standard cubic foot of exhaust. At the exhaust rate of 95,300 dscfm, this works out to a particulate emission rate of 12.25 pounds per hour. With a design trona feed rate of 275 TPH, this calciner particulate emission rate then works out to a factor of 0.045 lb/ton of trona feed.

The Division's review into particulate controls from other recent applications in the trona patch, show that particulate emissions from existing trona calciners run from 0.06 to 0.47 pounds per ton of ore throughput. The latest permit issued for new construction of a similar type source (OCI trona plant, CT-1299, May '97), considered 0.047 lb/ton of trona feed as representing BACT. Thus at 0.045 pounds per ton; this new calciner will operate well below existing equipment of similar type and function. Therefore, the proposal represents the state-of-the-art control, and the Division proposes to accept Solvay's proposal as representing BACT for particulate control on this calciner.

★ Dryer ★

As noted earlier, Solvay is proposing to use another electrostatic precipitator, designated source AQD #82, to control particulate emissions from the new gas fired soda ash dryer stack. Solvay has certified that this precipitator will meet an outlet particulate loading of 0.010 grains per standard cubic foot of exhaust. At the exhaust rate of 40,200 dscfm, this works out to a particulate emission rate of 3.45 pounds per hour. With a design soda ash production rate of 161 TPH, this dryer particulate emission then works out to 0.021 lb/ton of soda ash production.

The Division has recently permitted a trona plant gas fired dryer (Tg Soda Ash, CT-1321, Oct. '97) which set particulate emissions of 0.010 gr/dscf, with a design exhaust rate of 39,032 dscfm. Thus the mass emission for that application is 3.35 pph of particulate matter. That dryer is a 100 TPH soda ash production sized unit, therefore the emission factor works out 0.034 lb/ton of soda ash.

In the OCI permit cited above (CT-1299, May '97) emissions for a similar type dryer were permitted at 0.041 lb/ton of soda ash, with 0.017 gr/dscf outlet loading, as representing BACT.

Recent Wyoming Air Quality determinations have shown that anything under 0.02 gr/scf is excellent performance, therefore at 0.010 grains per standard cubic foot of exhaust, this new dryer will operate equal to or below current emissions levels for similar existing equipment. The Division proposes to accept the proposal as representing BACT for particulate control on this dryer.

★ Boiler ★

Solvay is proposing to fire the AQD #85 boiler on natural gas fuel, with particulate emissions calculated based on the AP-42 Table 1.4-1 emission factor of 5.0 lb/MM ft³ of fuel fired, specified for "Large Industrial Boilers". At 100 MM Btu/hr firing rate, using 1035 Btu/ft³ heating value, the boiler will burn 96,618 CFH of natural gas fuel. This works out to a particulate emission of 0.48 pph. Solvay has proposed no additional particulate emission control.

The Division is aware that natural gas has inherently low particulate emissions, compared with other fuels. Because this boiler will use a low emitting fuel, and because the resultant particulate emissions are insignificant, the Division will accept Solvay's proposal as representing BACT for particulate control in this case.

★ Housekeeping Dust Collection Systems ★

Solvay is proposing to use standard baghouse/industrial ventilation systems to serve housekeeping dust collection needs throughout the new process train. Solvay has

certified that these baghouse systems will meet an outlet particulate emission loading of 0.01 grains/dscf of exhaust.

As mentioned earlier, current NSPS Standards for housekeeping dust collection systems limit particulate emissions to 0.02 grains per dscf. Therefore the Solvay proposal represents excellent performance at half the NSPS standard. The Division will accept this level of efficiency as reflecting the state of the art for baghouse emission control, and agree that it satisfies BACT for this pollutant.

Nitrogen Oxide Emissions

★ Calciner ★

As previously described, Solvay is proposing to fire the new AQD #80 trona calciner with natural gas, at a design firing rate of 400 MM Btu/hr. Natural gas has inherently lower NO_x emissions than alternative fuels such as coal or oil. In addition, the burner will be designed for "Low NO_x" performance designed to meet a NO_x emission rate of 0.05 lb/MM Btu, or 20.0 pph. This performance represents the state of the art for this type of emission control, and the Division has determined that the Solvay proposal satisfies BACT for this pollutant.

★ Dryer ★

As previously described, Solvay is proposing to fire the new AQD #82 trona dryer with natural gas, at a design firing rate of 200 MM Btu/hr. As above, natural gas has inherently lower NO_x emissions than alternative fuels, but the burner that was finally selected will be a North American "Flame Grid" unit designed for 0.15 lb/MM Btu performance.

The reason that 0.05 lb/MM Btu performance is not being proposed for this dryer is that investigation has shown that such an ultra low achieving burner would require the use of a high alloy "iconel" liner to attain the required dryer temperatures. Review then showed that such a liner would be subject to deterioration, which could result in metal contamination levels of the soda ash product, which are unacceptable to customers. The next best burner available is the 0.15 lb/MM Btu North American burner cited above. The Division has reviewed Solvay's justification, and given the technical limitations due to contamination concerns, has determined that this performance represents the state of the art for this type of emission control. Thus the dryer will meet a NO_x mass emission rate of 30.0 pph, and the Division has determined that this performance satisfies BACT for this pollutant in a soda ash dryer application.

★ Boiler ★

The burner that Solvay is proposing to use on the AQD #85 boiler will achieve "Low NO_x" performance of 0.038 lb/MM Btu.

As part of the application, Solvay conducted a BACT review of NO_x emission controls for natural gas fired package boilers by reviewing post combustion controls, including Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR).

SCR uses ammonia in the presence of vanadium pentoxide catalyst to convert NO_x to nitrogen and oxygen. Solvay rejected SCR technology because of potential environmental impact and product contamination through the use of ammonia, because

of the expense and RCRA hazardous waste potential of the heavy metal catalyst, and because of the high 500-800° F temperature flue gas requirement for the process.

According to Solvay's application, SNCR requires even higher flue gas temperatures of 1600-1800° F to reduce NO_x, and has been demonstrated on combined cycle natural gas fired, using ammonia as the reagent. Once again, Solvay has concerns with potential environmental impact and product contamination from ammonia, and with the ultra-high required flue gas temperatures.

The most stringent NO_x emission rate found for recent past boiler BACT analyses, is 0.015 lb/MM Btu achieved on a 380 MM Btu/hr gas fired electric generator in the San Francisco Bay Area. This rate was achieved using selective catalytic reduction (SCR) in combination with low NO_x burners and flue gas recirculation. SCR has the potential for adverse environmental impacts because of possible impact from ammonia emissions and the hazardous waste potential of the catalyst. Other analyses also have noted the fluctuating nature of boiler operations cause varying catalyst bed temperatures not experienced in the relatively stable operation of an electric generator. Thus there are concerns that these fluctuations would reduce the control efficiency of this technique considerably below the theoretical projections. From the Division's experience it has been found that the cost of exotic NO_x control has not been worth the emissions reduction benefit, and it has not been shown that any of these technologies offers reliable control efficiencies significantly better than proposed.

Recent natural gas fired boiler BACT determinations include acceptance of 0.10 lb/MM Btu emission guarantees for General Chemical's 490 MM Btu/hr unit (CT-1199; February '96) and FMC's 315 MM Btu/hr unit (CT-1045A; November '95). SF Phosphate's 350 MM Btu/hr unit was permitted at 0.14 lb/MM Btu (CT-1043; October, '93) based on limited hours of full firing. Texasgulf's 200 MM Btu/hr unit (CT-945; September '91) also was permitted at 0.14 lb/MM Btu, representing BACT at that time.

Solvay cites investigation showing that the most stringent control they found for a "similar" boiler type facility was 0.043 lb/MM Btu on a 62.5 MM Btu/hr Kern County, California installation. From the performance of other recently Wyoming permitted boiler installations, it is clear that Solvay's 0.038 lb/MM Btu proposal is well below the current actual industry standard for this region. Thus, it is concluded that Solvay's projected emission rate represents the lowest achievable NO_x emission rate the Division is aware of for this type of natural gas fired boiler, and the Division is proposing to accept Solvay's preferred alternative of low NO_x burners operating at 0.038 lb/MM Btu.

Volatile Organic Compound Emissions

★ Calciner ★

As noted earlier, volatile organic compound emissions are defined as non-methane, non-ethane organic compounds. VOC's have been found to be emitted from various trona processing operations, and it is suspected that a majority of these VOC's are driven off from organic contaminants in the trona ore and possibly from the oil shale that is mined around the edges of the trona ore deposits. As the point at which heat is first applied to the trona ore, the calciner stacks have been shown to be a primary emission points for VOC emissions in the soda ash industry.

There are five physical techniques that the Division is aware of that may control VOC emissions. They are 1) combustion/oxidation, 2) absorption, 3) adsorption, 4) condensation, and 5) fine particulate capture. Solvay has considered these control options as described below. Analyses of emission control costs were calculated based on the AQD #80 projected average VOC emission rate of 210.65 pph, rather than the

maximum 533.5 pph VOC rate of the stack. The average emission rate of 210.65 pph is based on the average tested results from the existing calciners projected to the new calciner on a lb/ton ore feed basis. The 533.5 pph maximum instantaneous rate is based on the addition of the 3 standard deviations to represent the maximum hourly rate. The applicant and the Division consider the average expected emission rate more representative to calculate control costs as this is the expected rate on an annual basis and control costs are estimated on an annual average basis.

Combustion/Oxidation

The process of combustion (also referred to as oxidation) is frequently used to control the emissions of organic compounds. At sufficiently high temperatures and adequate residence times, any hydrocarbon can be converted to carbon dioxide and water by combustion. Combustion devices are often simple devices, typically consisting of a burner, which ignites the organic fuel, and a chamber which provides adequate residence time for the oxidation of the hydrocarbon to be completed. Equipment used for this service can be divided into three categories; flares, thermal incinerators and catalytic incinerators.

Thermal decomposition (burning) of the VOC's by a flare was investigated by Solvay and found to be technically feasible, however, the heating value of the organic gasses in the calciner exhaust is too low to burn independently. Therefore natural gas would be required as a supplemental fuel. Section 3.4.3 of the application contains the cost effectiveness calculations in dollars per ton of VOC control. The cost effectiveness for the flare system was reported as \$9,159 per ton of VOC, to achieve a projected 98% control efficiency. Solvay found that costs of such an option would be prohibitive.

In contrast to a flare, during an incineration process waste gasses pass over or around a burner flame into a closed residence chamber, where combustion is completed. Solvay found that although thermal incinerators (also called thermal oxidizers or afterburners) were technically feasible, the control efficiency was no greater than for catalytic incinerators, which have lower annual costs.

Catalytic oxidation is similar to thermal oxidation, except that combustion of the waste gasses takes place in the presence of a catalyst that reduces the required temperature to ensure complete combustion. With lower temperatures, comes lower supplemental fuel use costs. Solvay found that catalytic oxidation achieves 95% control of VOC's, but the catalyst has a finite life, and must be replaced on a regular cycle. The replacement frequency is increased in dirtier exhaust streams, such as calciner exhaust. The cost effectiveness for the catalytic oxidation system was reported as \$10,858 per ton of VOC. Solvay found that costs of such an option would be prohibitive to their operation.

Absorption

Absorption refers to contacting the waste gasses with a liquid so that the organics dissolve into or chemically react with that liquid. Contact is usually made in a wet scrubber. Solvay found that although the technique is technically feasible for controlling organic material, it was also considered technically unreasonable for their application because no known application of absorption has been applied to calciners at trona plants. They felt that the costs of developing absorptions applications for the process would be prohibitive, and they did not further evaluate the process.

In an earlier application for VOC control, Solvay found that scrubbing was infeasible because contact with four scrubber vendors (Ceilcote Air Pollution Control, Westport Environmental Systems, Croll-Reynolds Company, and Ducon Environmental Services) resulted in the conclusion that a wet scrubber was not effective for removal of VOC's due to the low molecular weight, high volatility and low solubility of the compounds involved.

Carbon Adsorption

Adsorption is a surface phenomenon, where VOC's are selectively adsorbed into microscopic pores on the surface of the adsorbent material. Activated carbon is the most widely used material that is used for adsorption. Regarding this technique, once again Solvay found that although they considered the technique to be technically feasible for controlling organic material, it was also considered technically unreasonable for their application because carbon adsorption systems have not been applied to calciners at trona plants. They felt that the costs of developing absorptions applications for the process would be prohibitive, and they did not further evaluate the process. The cost effectiveness for the carbon absorption system was reported as \$5,006 per ton of VOC. Based on the technical questions and the low cost effectiveness Solvay found the cost to be prohibitive.

Condensation

Vapor condensation involves separating organic materials from the gas stream by phase change from gas to liquid, either by increasing pressure, or more commonly by reducing the temperature of the gas stream in a cooled condenser chamber (refrigeration frequently required). According to Solvay, condensers generally require inlet concentrations of thousands of parts per million, in order to achieve significant removal efficiencies (>80%), while the VOC concentration in the Solvay calciner would be much lower. As with other considered technologies, there are no existing applications at trona plants, and Solvay states that their cost estimate indicates that the option is cost prohibitive. The cost effectiveness for the condensation system was reported as \$6,664 per ton of VOC.

Fine Particulate Capture

Fine particulate capture is achieved with a wet electrostatic precipitator (WESP). Vendor literature on the subject indicates that such devices are capable of capturing a "blue haze", which is the caused from condensation of VOC emissions into fine particulate. Solvay was requested to investigate this option and they confirmed that WESP's were introduced to reduce emissions of sub-micron size particles, including condensible organics, especially those that are soluble. They considered the installation of a WESP as the primary control device, and as such, the unit would have to handle particulate from calcining, as well as the VOC's from the unit.

WESP's require process gas be cooled to the range of 110-120° F in order to achieve the desired condensation, thus the gas stream must be pretreated to saturation in a quencher, producing a dense mist of very small droplets. The droplets absorb the contaminants in the exhaust stream at varying efficiency (dependent on species, solubility & temperature), and then pass into cylindrical collecting tubes. Each of the tubes has a high voltage discharge electrode at the center, which forms an electric corona field. Particles passing through this field attain an electric charge, and migrate towards the oppositely charged walls of the tube. The fine water droplets also are charged and move toward the grounded wall, forming a film of liquid that runs down the tube, providing continual cleaning of the tube walls.

In their evaluation, Solvay assumed that only the condensible organics would be collected, while non-condensable organics including some VOC's, would not be controlled. To illustrate their point, they cited the case of 1,3 butadiene, which has a boiling point of 24° F. Thus when passing through a WESP at the 110-120° F operating temperature of that unit, 1,3 butadiene would not be condensed. Solvay also noted that many of the VOC compounds found in calciner exhaust are not water soluble, therefore they would not be absorbed by the water mist in the WESP.

Solvay noted that WESP's have a high water demand (2-6 gal/hr estimate for each 1000 acfm of flue gas). For the 264,000 acfm projected from the AQD #80 calciner, this works out to 528-1,584 gallons per hour for this application. For this water discharge, Solvay envisioned the necessity of an evaporation pond to handle the volume, and they felt that at least a portion of those VOC's would simply be emitted to the atmosphere at that point, without some treatment of this water.

They noted that the inlet loading to control device is projected at over 100,000 pph of trona dust, and indicated that the WESP was not designed to be used in high inlet grain loading processes. Solvay calculated that this 100,000 pph of dust would require 28,000 gal/hr of water to dissolve the dust, which is more than 17 times the amount of water the WESP is designed to handle.

Solvay worried about precipitation of calcium and magnesium carbonates on the walls of WESP, at higher pH levels of the alkaline trona dust. They did not feel that a water wash would be effective in cleaning such a unit of this potential scaling.

Thus Solvay found that the use of WESP's as a primary control device on trona calcining operations, was not technically feasible. They did not look at the use of WESP's as a secondary VOC control, after conventional particulate removal techniques, but they did note that the effectiveness of WESP technology on the VOC stream present in the calciner exhaust was problematic.

Conclusion

Solvay concludes that while some of the control options discussed are technically feasible, none are practical. Based on the economic analysis contained in the application, Solvay asserts that the feasible options would be too costly to warrant consideration for the purpose of VOC control for the calciner exhaust stream. No calciner VOC controls are listed the EPA's BACT/LAER Clearinghouse data base. They assert that the VOC concentrations in the calciner exhaust stream are quite low, and they propose that no add-on VOC control be accepted as BACT for this project.

Solvay's cost estimates for the control options range from \$5,006 to \$10,858 per ton of VOC removed. The Division has reviewed those costs and determined that it is currently not cost effective to control VOC emissions from the calciner stacks in the trona processing industry. Therefore, the Division proposes to accept Solvay's proposal of no add-on control as representing BACT for calciner VOC emissions.

★ Dryer ★

Gas fired soda ash dryers typically show dramatically lower VOC emissions than calciners, and since it has not been shown to be cost effective for controlling larger emission quantities, the Division will not require VOC control on the smaller volumes of emissions generated from the dryer, either.